

What is claimed is:

1. A process for the preparation of a motor coil which is penetrated and retained by a column-shaped motor core and which has a ribbon conductor which is disposed such that a width direction of the ribbon conductor is extended in a radius direction of the motor core, the ribbon conductor being helically superposed on one another in an axis direction of the motor core and along an outer peripheral surface of the motor core, comprising:

10 a first step for molding a mother material to prepare a first molded product comprising a column part, and a fin part projected in the form of flat plate from an outer peripheral surface of the column part to an outer side in a radial direction of the column part and helically continuing in an axis direction of the column part at predetermined intervals along the outer  
15 peripheral surface of column part;

a second step for punching out the column part from the first molded product in an axis direction of the column part with retaining the fin part to remove the column part to prepare a second molded product helically formed by the fin part;

20 a third step for coating the second molded product with an insulating film to prepare a third molded product; and

a fourth step for pressurizing both sides of the third molded product in a direction having punched out the column part to deform the third molded product such that flat plate portions of the fin part are superposed

on one another.

2. An apparatus for the preparation of a motor coil which is penetrated and retained by a column-shaped motor core and which has a ribbon conductor which is disposed such that a width direction of the ribbon conductor is extended in a radius direction of the motor core, the ribbon conductor being helically superposed on one another in an axis direction of the motor core and along an outer peripheral surface of the motor core, comprising:

10 a first means for molding a mother material to prepare a first molded product comprising a column part, and a fin part projected in the form of flat plate from an outer peripheral surface of the column part to an outer side in a radial direction of the column part and helically continuing in an axis direction of the column part at predetermined intervals along the  
15 outer peripheral surface of column part;

a second means for punching out the column part from the first molded product in an axis direction of the column part with retaining the fin part to remove the column part to prepare a second molded product helically formed by the fin part;

20 a third means for coating the second molded product with an insulating film to prepare a third molded product; and

a fourth means for pressurizing both sides in a direction punching out the column part of the third molded product to deform the third molded product such that flat plate portions of the fin part are superposed on one

another.

3. An apparatus for the preparation of a motor coil as defined in claim 2, wherein the first means comprises:

5 a column-shaped space part capable of accommodating the column-shaped mother material in a condition that the material is extended in the longitudinal direction,

a forging mold having in an interior thereof a fin-shaped space part continued helically along an outer peripheral surface of the column-shaped  
10 space part, and

a forging punch capable of molding the first molded product by pressurizing the mother material charged in the forging mold from the both sides in an axis direction of the mother material.

15 4. An apparatus for the preparation of a motor coil as defined in claim 3,

wherein the forging mold has a plurality of plate-shaped blocks having a "U"-shape in a plan view and capable of forming an opening hole extended in the longitudinal direction by combining a pair of the blocks  
20 with each other in faces of both sides of the blocks in a right-left arrangement and superposing a plurality of the combined blocks on one another in the longitudinal direction,

the plate-shaped blocks comprising:

an upper side part extended approximately horizontally in the direc-

tion from the face of one side thereof,

a lower side part extended approximately horizontally in the direction from the face of the other end thereof in a location under the upper side part,

5 an inclined part having two ends linking to the upper side part and the lower side part, continuously extended from the upper side part to the lower side part, while the inclined part gradually descending from the upper side part to the lower side part,

a notch part formed by notching the face side area of the inclined  
10 part in the longitudinal direction, and

a recess part provided by depressing an upper surface of the plate-shaped block to a predetermined depth from the upper surface and a predetermined width from the notch part continuing from the face of the upper side part to the lower side part along an upper end of the notch part;

15 and

wherein the plate-shaped blocks are combined right and left with each other in their faces to continuously link an upper surface of the lower side part of one plate-shaped block with an upper surface of the upper side part of the other plate-shaped block and continuously link a lower surface of the upper side part of the one plate-shaped block with an upper surface of the  
20 lower side part of the other plate-shaped block, and the column-shaped space part is formed by combining the notches of the plate-shaped blocks, and the fin-shaped space part is formed by combining the recess part of each of the plate-shaped blocks with an under surface of the plate-shaped

block superposed on the recess part.

5. An apparatus for the preparation of a motor coil as defined in any of claims 2 to 4,

5 wherein the second means comprises:

a punching die having a retaining part for retaining the fin part of the first molded product and a punching hole enabling the punching out of the column part of the first molded product in the axis direction, and

10 a punch for punching out the column part of the first molded product in the axis direction in cooperation with the punching hole of the punching die.

6. An apparatus for the preparation of a motor coil as defined in claim 5,

15 wherein the punching die has a plurality of plate-shaped blocks having a "U"-shape in a plan view and capable of forming a punching hole extended in the longitudinal direction by combining a pair of the blocks with each other in faces of both sides of the blocks in a right-left arrangement and superposing a plurality of the combined blocks on one another in  
20 longitudinal direction,

the plate-shaped blocks comprising:

an upper side part extended approximately horizontally in the direction leaving the face of one end thereof,

a lower side part extended approximately horizontally in the direc-

tion from the face of the other end thereof in the location under the upper side part,

an inclined part having two ends linking to the upper side part and the lower side part, continuously extended from the upper side part to the lower side part, while the inclined part gradually descending from the upper side part to the lower side part,

a notch part formed by notching the face side area of the inclined part in the longitudinal direction, and

a recess part provided by depressing an upper surface of the plate-shaped block to a predetermined depth from the upper surface and a predetermined width from the notch part continuing from the face of the upper side part to the lower side part along an upper end of the notch part; and

wherein the plate-shaped blocks are combined right and left with each other in their faces to continuously link an upper surface of the lower side part of one plate-shaped block with an upper surface of the upper side part of the other plate-shaped block and continuously link a lower surface of the upper side part of the one plate-shaped block with an upper surface of the lower side part of the other plate-shaped block, and the opening hole is formed by using the notches of the plate-shaped blocks, and the retaining part is formed by combining the recess part of each of the plate-shaped blocks with an under surface of the plate-shaped block superposed on the recess part.